

Claims

- [c1] 1. A mold for encapsulating semiconductor devices mounted on a packaging substrate, the mold comprising:
 - a top mold having a top runner and a plurality of mold cavities, wherein the mold cavities are connected to the top runner and located correspondingly to the semiconductor devices; and
 - a bottom mold having at least a second dummy runner.
- [c2] 2. The mold of claim 1, wherein the top mold further comprises at least a first dummy runner connected to the top runner and the first dummy runner extends into a space between the mold cavities.
- [c3] 3. The mold of claim 2, wherein the first dummy runner is located above but separated from the second dummy runner by the packaging substrate.
- [c4] 4. The mold of claim 2, wherein the first dummy runner extends in a direction perpendicular to the top runner.
- [c5] 5. The mold of claim 1, wherein the bottom mold further comprises a bottom runner connected to the second dummy runner.

- [c6] 6. The mold of claim 5, wherein the top runner is located above but separated from the bottom runner by the packaging substrate.
- [c7] 7. The mold of claim 5, wherein the second dummy runner extends in a direction perpendicular to the bottom runner.
- [c8] 8. The mold of claim 1, wherein each mold cavity has an identical dimension and the mold cavities are arranged as an array in the top mold.
- [c9] 9. The mold of claim 1, wherein each cavity has a volume at least to accommodate one of the semiconductor devices.
- [c10] 10. The mold of claim 1, wherein the top mold further comprises a plurality of first dummy mold cavity connected to the mold cavities.
- [c11] 11. The mold of claim 1, wherein the top mold further comprises a plurality of second dummy cavities connected to the top runner.
- [c12] 12. The mold of claim 1, wherein the mold further comprises a pot located within the top and the bottom mold such that the pot connects the top runner and the bottom runner.

[c13] 13. The mold of claim 12, wherein the pot comprises a first cavity formed in the top mold and a second cavity formed in the bottom mold.

[c14] 14. A method of encapsulating semiconductor devices, comprising the steps of:
providing a packaging substrate having a first surface and a second surface, wherein the first surface of the packaging substrate has the semiconductor devices disposed thereon;
placing the packaging substrate inside a mold; and
injecting a molding material into the mold so that a plurality of molding compounds are formed on the first surface of the packaging substrate, wherein at least a first vertical rib and a first horizontal rib are formed on the first surface and at least a second vertical rib and a second horizontal rib are formed on the second surface simultaneously.

[c15] 15. The method of claim 14, further comprising forming at least a first vertical groove and a first horizontal groove on the first surface of the packaging substrate in locations corresponding to the first vertical rib and the first horizontal rib before placing the packaging substrate into the mold.

- [c16] 16. The method of claim 14, further comprising forming at least a second vertical groove and a second horizontal groove on the second surface of the packaging substrate in locations corresponding to the second vertical rib and the second horizontal rib before placing the packaging substrate into the mold.
- [c17] 17. The method of claim 14, wherein the molding material is a transparent molding material.
- [c18] 18. The method of claim 14, wherein after the step of injecting a molding material into the mold is performed, the semiconductor devices are encapsulated in one of the molding compounds.
- [c19] 19. A packaging substrate for supporting a plurality of semiconductor devices and facilitating the encapsulation of semiconductor devices using the packaging mold in claim 12, characterize in that the packaging substrate has a plurality of openings in locations that correspond in position with at least to the top runner, the second dummy runner or the pot.